REMARKS/ARGUMENTS

Claims 1, 15-17, 22 and 51-59 are pending. The claims have been limited to treatment of male mammals with an SMR-1 peptide comprising SEQ ID NO: 2 (QHNPR) to increase sexual arousal. Support for the amendment is found throughout the specification and in the examples which demonstrate that administration of the SMR-1 peptide increases sexual arousal in mammals. No new matter has been added.

The Applicants thank Examiners Wegert and O'Hara for the courteous and helpful interview of July 26, 2007. Claim language that would address the indefiniteness rejection was discussed, such as use of "A method for increasing sexual arousal. . .". in place of "treating a mental disorder". Replacement of the phrase "impaired social activity linked to sexuality" was reviewed. Discussed possible limitation of claims to male animals and further structural description of the SMR-1 peptides, e.g., use of QHNPR peptide (SEQ ID NO: 2).

Restriction/Election

The Applicants previously elected Group I, Claims 1-20 and 22, directed to methods for treating a disease using a ligand, and the species of SEQ ID NO: 2 (Gln His Asn Pro Arg) and the species "impaired social activity linked to sexuality". The Restriction Requirement has now been made FINAL. The Applicants understand that any additional species embraced by the present claims will be examined upon an indication of allowability for the claims as they read on the elected species.

Objection

Claim 1 was objected to as generically encompassing non-elected inventions, e.g., mental disorders not related to the elected invention. This objection is moot in view of the deletion of the term "mental disorders" from claim 1.

Rejection—35 U.S.C. §112, first paragraph

Claims 1, 15-17, 22 and 51-59 were rejected under 35 U.S.C. 112, first paragraph, as lacking adequate enablement. These grounds of rejection are moot in view of the following:

(1) Route of administration. The claims are now directed to parenteral ("outside the alimentary tract") administration.

(2) Relevance of rat model. The claims are now directed to increasing sexual arousal. As discussed in the interview, the experimental data of record shows that parenteral administration of the SMR-1 peptide increases sexual arousal in male mammals as determined by several different parameters including the Irwin test (Example 2), the behavior of male rats in the presence of females (Example 3, page 18), latency to the first mount (Example 4), ejaculations, self-care and interest in other rats (Example 5), behavior during refractory periods (Example 6), demonstration of a dose-response relationship with the SMR-1 peptide on male rat sexual behavior (Example 7), and the effect of the SMR-1 peptide on post-ejaculatory intervals (Example 8), as well as by the antidepressive effects of administering the SMR-1 peptide in the Behavior Despair Test (Example 9). Based on the present disclosure, including these experimental data, one with skill in the art would recognize that parenteral administration of an SMR-1 peptide increases sexual arousal in male mammals.

(3) Commonalities in mammalian sexual behavior. Pfaus et al., "What can animal models tell us about human sexual response" (previously submitted) shows that humans and other animals, such as rats, share many commonalities with respect to sexual behavior. Tables 1 and 2 in Pfaus depict measures of rodent sexual behavior that can be used to model human sexual behavior (page 11, lines 9 *ff.*).

These tables refer to appetitive sexual behavior which includes sexual excitement, preparatory sexual behaviors, sexual arousal, such as penile reflex and noncontact erection, copulatory responses, and copulatory responses. Furthermore, the use of animal models to model similar human behavior has long been an integral part of medical and scientific research; see the previous Declaration/Affidavit of Dr. Renoncet-Ungeheuer.

Same biochemical mechanism in rats and humans. While the SMR-1 peptide was first identified in rats, as shown in the Declaration of Dr. Rougeot (previously attached) the QHNPR (SEQ ID NO: 2) peptide has the same receptor in rats and in humans: NEP (neutral endopeptidase, also known as neprilysin). NEP is a peptidase that degrades substance P. Substance P is involved in sexual behavior (see the abstract of Argiolas, "Neuropeptides and sexual behavior, previously attached). The QHNPR (SEQ ID NO: 2) peptide inhibits NEP (neprilysin) in rats and humans, see Rougeot et al., PNAS (2003). While the invention is not intended to be limited to a particular mechanism of action, the inhibition of NEP would be expected to reduce the degradation of substance P, thus increasing the levels of substance P available to modulate sexual behavior. In fact, Fig. 1 of the previously attached Declaration of Dr. Rougeot shows just that: that the QHNPR (SEQ ID NO: 2) peptide inhibits the breakdown of substance P by human NEP. These experimental data show that the peptide of SEQ ID NO: 2 is active in humans and regulates molecules such as substance P involved in sexual behavior. Accordingly, one with skill in the art would accept the rat model, and the experimental data of record, as supportive of the effects of SMR1 peptide on the sexual activity of other mammals besides rats.

(4) Normal rats. The Official Action questions the experimental data of record, because so-called normal rats were used in the experiments. However, the Office has not provided any reasoning why the effects of the SMR1 peptide on normal rats would not be

predictive of its ability to generally enhance or augment sexual behavior in rats in general. Moreover, "normal rats" are conventionally used to determine the effects of drugs which enhance various sexual behaviors and sexually-related physiological phenomena, see Pfaus et al.

In addition, the animal models described by Pfaus relate to both male and female animals, see e.g., page 5. While the specification exemplifies enhancement of male social-sexual behavior, the Office has provided no technical or scientific reason (e.g., evidence that females don't produce the SMR1 peptide or lack SMR1 receptors) to doubt that corresponding social-sexual effects would be observed in female animals.

For all these reasons, the Applicants respectfully request that this rejection be withdrawn.

Rejections—35 U.S.C. §112, second paragraph

Claims 15 and 51 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite. This rejection is moot in view of the amendments above.

CONCLUSION

In view of the remarks and amendments above, the Applicants respectfully request reconsideration and withdrawal of the outstanding rejections and the passage of this case to Issue.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
Norman F. Oblon

Thomas M. Cunningham
Registration No. 45,394

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413-2220
(OSMMN 06/04)
NFO/TMC:aif